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ABSTRACT

Presented as a paper at the 1974 Conference on Non-Formal Education held at the Michigan State University, this bulletin contains selective digests of not readily available, unpublished and published documents, research reports, summaries, descriptive articles, conference reports, international surveys, and observer or participant reports on the use of communication media and technology in nonformal educational projects around the world. Specific instances are cited, with emphasis on projects in the less developed areas, which might serve as tentative guidelines for future development. The first section discusses the need for a nonformal approach to education and how this might be combined with other formal and informal learning opportunities. The second section deals with the types of media and technology currently in use including TV, radio, traditional folk media, games and simulation techniques, audio cassettes, programed instruction, and multimedia approach. (SK)

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COMMUNICATION MEDIA AND TECHNOLOGY: A LOOK AT THEIR ROLE IN NON-FORMAL EDUCATION PROGRAMS

Henry T. Ingle

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COMMUNICATION MEDIA AND TECHNOLOGY: A LOOK AT THEIR ROLE IN NON-FORMAL EDUCATION PROGRAMS is one of a series of Bulletins developed by the Information Center on Instructional Technology for distribution to educators in Africa, Asia and Latin America who are interested in up-to-date information for improving lifelong education around the world. Henry T. Ingle is a member of the staff of the Center and the Academy serving as specialist in research and evaluation in the field of educational media.

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(English, French and Spanish)

OVERVIEW

This publication was developed originally as a paper for presentation at the Michigan State University Conference on Non-Formal Education held in East Lansing, Michigan, April 24-26, 1974. Comments, observations and information received from individuals at the Conference, as well as from others who subsequently read the paper, have lead to this revised version.

This Bulletin contains selective digests of not readily available published and unpublished documents, research reports, summaries, descriptive articles, conference reports, international surveys and observer or participant reports on the use of communication media and technology in non-formal educational projects around the world. Specific instances are cited in which media and technology are being used in these projects, along with background information on each of these efforts with particular emphasis being given to projects in the less-developed regions of the world.

The purpose of this publication is to review the role communication media and technology have played in the area of non-formal education, to bring interesting projects and approaches to the attention of others working in this area, and to identify lessons learned from their use which might serve as tentative guidelines for future development.

In the first section of the publication emphasis has been placed on the need for a non-formal approach to education and the implications such an approach holds for international development programs seeking to circumvent the lack of formal schooling which often binds individuals into lives of poverty. And while emphasizing non-formal approaches to education, broadly defined, serious consideration also is given to the need for combining and integrating learning opportunities in general—be they non-formal, formal or informal in approach.

A definition of terms for each of these approaches has been provided in the second section, followed by a review of the different types of media and technology which have been used or currently are in use in non-formal programs. The technology reviewed include television, radio, traditional folk media, games and simulation techniques, audio cassettes, programmed instruction and multi-media approaches.

This review has been arranged according to specific media in order to highlight a particular set of approaches to non-formal education which by and large have received limited consideration in the current writings and efforts focusing on the development of non-formal education programs. The organization of the review in this manner in no way suggests that technology, in and of itself, is being advanced as a panacea for the solution to educational development problems.

Quite the contrary, the experiences herein reviewed indicate that any program which starts with a medium or technology that someone is anxious to use, rather than with a problem to be solved, is doomed to limited success at best. Media and technology may well have a role to play when considering alternative programs but they should not be the overriding concern. Rather than advocating the use of technology for its own sake, the specific instances of media are cited to call attention to the problem-identification process which must precede their use.

Some sixty countries are cited as having had relevant experiences with the use of the media and technology to provide varying types of learning opportunities and information to their people. Some of these efforts have been successful in terms of fulfilling stated objectives; others have not. Each provides, however, valuable insights into the process of planning for the use of media and technology in non-formal education.

There undoubtedly are a good many examples of the use of media and technology in non-formal education programs which have not been included in this overview. The limited number of published documents on the subject make it necessary to rely heavily on word-of-mouth or observer reports on projects, and many good projects did not reach our attention at all.

The projects and experiences reviewed, therefore, are illustrative rather than definitive. For this reason the paper in some instances actually outlines more of what still needs to be learned about the use of media and technology for non-formal education than what has been learned. Nonetheless, a number of intriguing approaches are presented which have been used in many settings around the world to help provide specific kinds of educational experiences to varying types of individuals.

The tentative guidelines provided in the concluding section of the publication are presented as a point of reference for the reader. Any evidence either lending support to these guidelines, refuting them, or restating and clarifying the substance of this paper would be appreciated by the writer and the Information Center on Instructional Technology.

I. INTRODUCTION: WHY NON-FORMAL EDUCATION?

Educational planners around the world are well aware that learning does not take place only in the confines of a classroom. It also is well understood that a country's formal schooling system of primary, secondary and higher education can only partially service the varying needs for human resources development.

The development of human resources involves something that is far more basic than the conventional, academic and scientific body of knowledge and technical subject matter taught in schools. This "something beyond" has been described by some as improving the "quality of life." President Nyerere of Tanzania in 1967 called it an "education for self-reliance," which implies a complete reappraisal of the purposes of the school and attempts to make education become part of the ongoing development of a community.

Included in this view of education are a variety of human learning needs, such as the acquisition of occupational and household skills, the assimilation and successful utilization of information on nutrition, sanitation, maternal/child health care, family planning, small farm management, housing improvement, the cultivation of vegetables and fruits on family plots of land, and basic everyday consumer economics. It also includes the formation of new attitudes, values and aspirations and the building of an informed, active citizenry where each member is concerned with his own individual well being, that of his neighbors and of his environment. This view of education and learning is focused on human beings; its intention is to help an individual find ways of articulating his needs and those of his community, mobilizing resources to meet these needs, and taking command of his own destiny for self-realization. It is a type of learning that is not imposed by outside forces, but is sought and developed by the learners themselves.

This type of education is distinguished best by the role it plays, and not by its structure. Namely, it serves both young people and adults, literates and illiterates; it is closely related to local needs, and it is neither time-bound nor place-bound. That is, it need not take place in school buildings, nor follow a national curricula, nor require specified, rigid lengths of time to complete nor have as its purpose the earning of a degree or title. Rather, it is lifelong. It is education in a broad sense, regardless of where, when, or how the learning occurs.

More importantly, this type of education stresses the development of learning opportunities of all types for the masses of people in the traditional and intermediate work sectors, rather than the lopsided emphasis on high-level manpower development for the industrialized sector. It relates to a new set of development imperatives which Harbison,¹ Milier² and others concerned with the quality of life in developing countries refer to as part of the "dethroning of GNP" as the sole and all-encompassing measure of national development.

This new notion of development recognizes that human welfare is not necessarily enhanced simply by increased cash flows to a country or greater success of a country in the international marketplace. Its aim is to create possibilities for people to live in more satisfying environments whatever their ways of life.

The audience to be served by this type of learning opportunity in this development point of view is the majority of the world's population which either lives a marginal rural existence in a vicious cycle of agricultural work of low productivity or which barely survives in cardboard shanties on the fringes of a large, crowded urban metropolis. McAnany,³ in a recent review of radio's role in rural development, aptly describes the situation:

These people suffer from poor nutrition and health, lack of (basic) education, and (indulge in) a passivity and fatalism... to make their life more bearable. Most governments want...this to change and for these millions of people to 'modernize,' become more productive, eat better, get a basic education, produce fewer children, have better health. Some governments add to this litany of good wishes that people should also participate in their own development, have control over their lives, maintain a sense of their own cultural identity, and still share in the other benefits of modern life. But few (if any) countries seem to know how all this is to be done.

Certainly the formal school system should be part of the solution for alleviating these conditions, but the task is much larger and requires much more than a single Ministry of Education traditionally has been called upon to do within the confines of the school. It requires inter-ministerial, inter-agency cooperation in health, agriculture, nutrition and education with integrated programs and projects which are directly linked to the milieu and lifestyle of the people most in need of opportunities. Thus, it requires that particular attention be given to the interrelationship between the *formal, non-formal and informal* systems for transmitting knowledge in a society. Each system offers a partial solution to the problem, and in combination may represent the integrated approach needed for a more encompassing solution.

A. Definition of Terms: What Is the Difference Between Formal, Non-Formal and Informal Education?

As herein defined, *formal education* refers to "the hierarchically structured, chronologically graded 'educational system,' running from primary school through the university and including, in addition to general academic studies, a variety of specialized programmes and institutions for full-time technical and professional training."⁴

Informal education refers to "the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his or her environment—from family and neighbors, from work and play, from the marketplace, the library and the mass media."⁵ The label "informal" comes from the fact that this type of learning process, as a rule, is relatively unorganized and unsystematic. Nonetheless, it accounts for a very large amount of the practical learning that any individual acquires in a lifetime.

Through informal education, for example, a child acquires a substantial vocabulary at home before going to school, a daughter learns child care and cooking from helping and observing her mother, a son picks up occupational skills from his father and children and adolescents learn from their peers.⁶

Learning in this way often is accomplished through "learning-by-doing, being instructed or inspired by others to perform specific tasks, through association with peers and fellow workers, or simply by participating in a working environment or in the affairs of community life."⁷

Non-Formal education, as defined by Grandstaff,⁸ Coombs,⁹ Schramm,¹⁰ Bowers¹¹ and others is any organized activity, outside the established framework of the formal school and university system, which aims to communicate specific ideas, knowledge, skills, attitudes and practices in response to a predetermined need.

Non-formal education focuses on the improvement of social and personal living, and occupational capabilities. It is important because of the immediate and practical utility of the learning it produces. It encompasses the full range of learning activities earlier identified in the introduction of this paper, and it is of value only to the degree it can help an individual - young or old, male or female - make practical changes in himself, his daily life and his environment in accord with his own goals and wishes.

Non-formal education is more oriented toward helping an individual solve problems than to absorb a particular curriculum content. It is strongly identified with specific locally felt needs, local culture and local ways of expression. Instruction is carried out in cooperation with many kinds of teachers, e.g., workers, health educators, community development assistants, or agricultural supervisors who may use a range of communication media, which have included posters, games, puppets, flashcards, charts, displays, exhibits, comic books, newspapers, books, audio tapes, video tapes, slides, film, filmstrips, radio and television.

Non-formal education can take place on the job, with families in a home, in discussion groups under a tree, in community centers, churches, temples or clinics. It need not necessarily be linked to the formal school system, but may be under the auspices of a wide range of governmental and non-governmental, private and public agencies.¹²

Quite simply defined, then, non-formal education is "an attempt to bury the notion that persons lacking formal schooling must forever be sentenced to an existence of poverty, misery and squalor."¹³

B. The Building of Learning Systems

Crucial to the understanding of these concepts - formal, non-formal and informal - is the idea of "learning systems." In each type of learning environment are to be found mutually reinforcing and complementary elements which integrate to form a country's total educational system. In the effort to improve services to benefit both rural and urban poor people planned collaboration among the various education, health, agricultural and labor agencies and ministries is needed, and a way must be found which minimizes bureaucratic obstacles for interdisciplinary cooperation.

As recently voiced by Harbison,¹⁴ any good assessment of a country's learning systems includes the examination of all available or potential learning services in combination, be they formal, non-formal or informal.

The goal is not to forego completely the formal school system but to examine those functions it has been called upon to perform in the past to determine which of those functions can today most practically and effectively be developed in other settings or be maintained and strengthened in the present system. It involves a reallocation of educational functions.

Each setting has strategic functions to perform and one particular setting should not be expected to perform *all* functions. Each setting should be developed with the most appropriate mix of services and programs, which are directly linked to the overall development of a nation.

While the focus of this paper is on non-formal education programs and their use of media and technology, this should not be the only preoccupation of those wishing to effect change in the vast pockets of rural and urban poverty around the world. Instead, serious consideration should be given to the strengthening and development of learning systems in general, combining and integrating formal, non-formal and informal approaches.

By concentrating first, however, on the learning opportunities provided by the non-formal setting, we can begin to define more sharply the essential functions and comparative advantages of the formal school structure, and thus pave the way for reallocation of functions and integrated learning systems.

C. Why Use Media and Technology?

For many years some people have been prophesying that communication, technology, and media would shortly transform the schools. Yet, around the world, schools have withstood with little difficulty the determined efforts of introducing change through media and educational technology. Thus, there are good reasons for continuing to be skeptical about the use of communication media and educational technology in the formal school system; but in the area of non-formal education, as this paper will indicate, there is much more reason to be hopeful about the role media and technology can play.

Because of its flexibility, non-formal education has considerable potential for innovation in the learning process, and particularly so when it comes to the use of communication media and educational technology. Taken as a whole, non-formal education has an enormous capacity to use an infinite variety of media.

In a broad look at communication media, Peter Goldmark in the *New Rural Society*¹³ has cautioned that whatever one may feel about the suitability of communication media and technology to bring about social change, it seems clear that they have demonstrated their usefulness in national development. What is more, nations are becoming more aware that development requires popular participation, which the media can stimulate. The pressure of time, populations with obstacles of geography, shortage of trained people and limited economic resources all re-

quire bolder strategies than those which rely primarily on the formal school structure and traditional instructional approaches.

The question should no longer be one of whether technology and media are useful to non-formal education, or for that matter, to learning systems in general, but rather how to use them effectively at a reasonable cost. We can examine various communication media, ranging from indigenous folk media such as puppets and songs; simple, low-cost technologies involving the printed word, posters, the use of games, audio cassettes, films, filmstrips, slides; videotaping; radio; to the bigger technologies of television and satellites.

As recently reported by Schramm in *Big Media Little Media*,¹⁶ evidence on the use of media both in and outside of the formal school system indicates that people can learn from any medium, and variations in learning are as likely to be dependent on how a medium is used as on which medium is used. Indeed, students usually learn as much from a communication medium used for instruction as from classroom teaching. What is more, there is no general learning superiority for high-cost media, such as television and computers, over low-cost media, such as radio, films and audio cassettes. And there is no subject matter or content area which communication media used as educational technology cannot effectively teach.

The term educational technology, as herein used, reflects more recent thinking on the use of communication media as part of a systems approach to the teaching/learning process and a more scientific and methodological approach to the solution of educational problems. When referring to educational technology, therefore, the discussion will not be limited to "hardware" and specific communication media, but will also look at the process of communication and how various media work most effectively to accomplish predetermined educational objectives.

Thus defined, educational technology includes not only the various communication media, ranging from chalk and blackboards to printed materials, film projectors, radio and television equipment, computers and satellites, but also the methods for organizing and utilizing these media as elements of an integrated teaching/learning system. This definition of technology also includes the frequently neglected techniques for creating appropriate content to be used with the media. Only by viewing communication media within this expanded concept of educational technology, and in the context of specific instances in which media will be used, does it become possible to make sound decisions on which media to use, if any.

II. A SELECTED REVIEW OF TECHNOLOGY IN NON-FORMAL EDUCATION

When one looks at the area of non-formal education and the use of communication media and technology, one is looking at an area where much has taken place, but on which relatively little has been published.

Research is sparse in this area. Not everything has been tested the way it should be. Cost-effectiveness studies are few, which is regrettable because the variety of the media used in non-formal education permits ample possibilities for media comparison. Hard evidence from the field is in short supply. It has been reported that less than one per cent of all the published documents on non-formal education are accompanied by hard data.¹⁷ This may be attributable to the fact that non-formal education has been more of something to be *done* than to be *studied*; also, it is too recent a priority subject to have attracted large amounts of research money from agencies concerned with economic and social development.

Most of the emphasis in media research has been placed on the more costly and glamorous media such as television.

As an example, there is the El Salvador Educational Reform program, which used television as a catalyst for change in grades 7-9 and was the subject of an extensive evaluation undertaken by the Institute for Communication Research at Stanford University.¹⁸ There also is the Comstock and Maccoby studies on Colombia's use of television for primary education in which the United States Peace Corps collaborated.¹⁹ And more recently, there is the Mayo, McAnany and Kees research on Mexico's "telesecundaria," a seven-year-old project using television to provide secondary school to students (grades 7-9) who, because of their distance from regular school and various other socio-economic factors, would normally not be able to continue their education beyond primary level.²⁰

"Radio Sutatenza" in Colombia, on the other hand, which is often cited as one of the largest and best known of the rural non-formal education projects, has had almost no quantitative research in its 25 year history. The same situation holds true for the radio "animateur" projects in French-speaking Africa which have been so important but have lacked research components.²¹

This paper, therefore, indicates more about what still needs to be learned regarding communication media and technology in

non-formal education than about what has been learned. Nonetheless, tentative guidelines do emerge, particularly from the research on development campaigns in the areas of health, agriculture and family planning, as well as from the use of media in formal education projects.

A. Where and How Media and Technology Have Been Used

Non-formal education incorporating varied types of communication media for instruction has been going on since the early 1930's in many nations, particularly in programs concerned with adult literacy and in various information campaigns.²²

The countries where communication media have been used for education read almost like the roster of the United Nations: for example, Algeria, Argentina, Australia, Brazil, Canada, Chile, Colombia, Cuba, Dahomey, El Salvador, Ethiopia, Ghana, Great Britain, Guatemala, Honduras, India, Israel, Italy, the Ivory Coast, Jamaica, Japan, Kenya, Korea, Malawi, Mexico, New Zealand, Niger, Nigeria, Peru, the Philippines, Senegal, Singapore, Taiwan, Tanzania, Thailand, Togo, Turkey, Upper Volta, and Vietnam.

In 1967 Schramm, Coombs, Kahnert and Lyle in *The New Media: Memo to Educational Planners* listed nine developing countries that were using television and five that were using radio for various education activities. In addition to the United States, these countries included:

1. *America Samoa*, using ETV for the upgrading of instruction;
2. *Niger*, with its radio clubs to support literacy teaching and the use of television at the elementary level in an effort to diffuse educational opportunities and promote the use of a national language;
3. *Colombia*, using television, as in the case of Samoa, to help teachers overcome restrictions of under-qualification and limited teaching materials at the primary school level (Colombia also is using radio, "Radio Sutatenza," for adult basic and literacy education);
4. *Nigeria*, where television was intended to help solve problems of upgrading instruction at the primary and secondary level, as well as for teacher training;
5. *Thailand*, using radio to provide technical training as a home service to school children, teachers and the general public,

and gradually extending the service to in-school radio broadcasts at the elementary level;

6. *Algeria*, using films, discussion groups, correspondence courses and radio programs to provide in-service teacher education;

7. *Australia*, serving its "out-back," sparsely settled central parts of the country with correspondence lessons supplemented by regular radio broadcasts and the Flying Doctor two-way radio service, which provided correspondence students with the opportunity to talk with their teachers and with each other to combat the shyness and inarticulateness that sometimes come with isolated study;

8. *New Zealand*, providing correspondence study opportunities to families living in remote areas using a two-way radio service like that of Australia and special radio broadcast programs;

9. *Japan*, using radio broadcast, correspondence study and television to provide secondary education to scores of young workers;

10. *Peru*, and its "Telescuela Popular" using TV for reaching students who had dropped out of school at an early age and to encourage community development in farming villages;

11. *Honduras*, with its "escuelas radiofonicas," modelled after the "Sutatenza" program in Colombia, to broadcast literacy and fundamental education lessons by radio to peasants in outlying villages;

12. *India*, with its use of the Radio Rural Forums in Poona for communicating with rural people, promoting innovations in community action development and disseminating information dealing with agriculture, health, literacy, education, local self-government and other aspects of economic and social development;

13. *Togo*, where radio rural forums also were used in areas of public health and rural economy; and

14. *Italy*, broadcasting television programs on adult literacy and fundamental education.

Most of these projects have continued; a few have not. Others, with both formal and non-formal components, have been started in Mexico, Brazil, Great Britain, Kenya, Nigeria, India, Korea, El Salvador, Guatemala, the Ivory Coast, Ethiopia and Zaire, all

with a certain demonstrated degree of success. The major forms of communication media that have been used in these projects are television and radio. The most systematically researched of all the projects has been the El Salvador educational reform and, in particular, the use of television.²⁵

B. Types of Media Currently in Use

Kramer²⁷ has classified educational broadcast media utilization, particularly television, in over 50 countries around the world according to purpose and salient characteristics. These vary as to type of program, including in-school and out-of-school use, and as to extensiveness of operation, ranging from pilot projects to small-scale regional efforts to nationally institutionalized services.

McAnany, in *Radio's Role in Development: Five Strategies of Use*, has described some thirty countries using educational radio under five different conditions, which range from the unorganized mass audience use of open broadcasts to organized learning groups, radio rural forums and radio clubs.

James Miller²⁸ in his report for the Academy for Educational Development, *Research and Development Priorities in Instructional Technologies for the Less Developed Countries*, lists some 40 different media combinations in use, with reference to characteristics and cost of the various types, questions regarding portability, individualized use, degree of user control, interactive capability and modality or sense to which media appeal. Out of the 40 media combinations described, Miller cites five that hold particular promise for education in less-developed countries: radio, audio tape cassettes, video tape, programmed instruction and satellite television.

To these basic five, Dwight Allen and Philip Christensen²⁶ have added a host of other technologies which are low in cost, including traditional folk media, such as puppets, marionettes, shadow figures, musical and comedy plays, stories, songs and drama; discussions; instructional board games; and materials that can be cheaply and easily reproduced like wooden dice, playing cards, ring or horse-shoe toss games and roulette. These media are designed to make use of local cultural traditions of entertainment that generate enthusiasm and participation by relating to the substance of the daily lives of villagers in rural areas. Also included are photo comic books, displays and exhibits in the market place, photographs, slides, film, filmstrips and simple programmed instruction materials.

Finally, Paulsten²⁸ has compiled a good bibliography of non-formal education activities around the world, many of which are employing communication media and technology.

Most of these media have received extensive consideration as to their appropriateness for non-formal education in scores of articles, publications, research reports and documents, a good number of which have been listed in the bibliography of this paper. Worthy of particular attention insofar as they relate to non-formal education are the documents *Big Media, Little Media* by Wilbur Schramm; *Attacking Rural Poverty: How Non-Formal Education Can Help* by Philip Coombs and his colleagues at the International Council for Educational Development; the series of papers in communication from the Department of Communication Arts at Cornell University, which includes those written by Royal D. Colle, Robert Crawford, Ronny Adhikarya and Peter Goldmark; *Let Jorge Do It: An Approach to Rural Non-Formal Education* by James Hoxeng and *Lower-Level Media Tools for Third World Educators: A Practical Guide* by Jock Gunter, both of the University of Massachusetts' Center for International Education. Also worthy of careful study is James Sheffield and Victor Diejomaoh's *Non-Formal Education in African Development*.²⁹

Comments from these individuals on specific communication media currently being used in non-formal education programs, beginning with the most complex, or what Schramm calls "big media," such as television, and progressing to the least complex or "little media," such as audio cassettes and traditional folk media, will be discussed below.

The use of other low-cost technologies, such as flip-charts, slides, transparencies, newspapers and comic books, will not be cited simply because evidence attesting to their effectiveness or information indicating where they are being used did not turn up in the course of reviewing the many documents for this paper.

There also was limited information on educational technology projects emphasizing the software and content development area, and for this reason references to the software aspects of technology and media are not as detailed as one would have liked. Those documents that were available were primarily concerned with software development within the formal school setting, or talked about the use and adaptation of ready-made, commercially produced materials from the United States and other industrialized nations. As examples, we have the Brazilian adaption of the Biological Sciences Curriculum Study³⁰ and the CEPTA-TV (Center for Production and Training for Adult

Education Television) effort emanating from Singapore and in part supported by the Friedrich Ebert Stiftung. This is an effort to produce adult educational materials for use on television in each of the eight member countries in Asia: Indonesia, Khmer Republic, Korea, Laos, the Philippines, Singapore, Thailand and Vietnam.³¹ There is also the radio project in the Masaya area of Nicaragua,³² which has as one of its objectives the development of a modern math curriculum for primary schools in a developing country setting. This effort is being sponsored by the U.S. Agency for International Development in conjunction with the Ministry of Education in Nicaragua and Stanford University's Institute for Mathematical Studies.

1. Television

With the exception of experimental attempts at using television in the *Krishi Darshan* program in India, the teleclubs of Senegal, some use of television in France, Japan and Italy, and the international use of the highly acclaimed productions of "Sesame Street" and "The Electric Company," television has not been used extensively for purposes of non-formal education in the less-developed countries, by and large.

The reasons cited as impediments to the use of television in non-formal settings, and particularly for rural development, are

- high costs
- relatively small number of individuals owning television receivers
- available receivers primarily in the possession of those individuals who have less of a need for non-formal education
- difficulty in producing relevant and interesting programs for a rural audience.

The *Krishi Darshan* program in India was an attempt to beam televised rural development information to about 80 villages near Delhi. The program was organized in 1967 by the Indian Space Research Organization in collaboration with All India Radio, the Indian Agricultural Research Institute and the Delhi administration through the establishment of community television. Half-hour rural-oriented programs were broadcast on the average of three times a week over a period of about four years.

E. V. Chitnis and several colleagues at the Indian Space Research Organization have reported on *Krishi Darshan* and indicate that the project has been a very useful exercise in the design of rural broadcasts, interdisciplinary interaction, techniques relating to the management of media programs, utilization of research and feedback.³³

The research on this program according to Everett Rogers³⁴ shows that about 50 per cent of the audience was composed of small children. Few farmers watched the television programs regularly. The programs were said to suffer from low-credibility because rarely was there an actual villager depicted in his setting. It also was felt that the programs were not sufficiently entertaining to command the attention of a farmer after a hard day of working in the fields.

The *teleclubs* of Senegal were sponsored by UNESCO in the mid-sixties with television broadcasts and group discussion.³⁵ About 500 women, mostly from the working districts around Dakar, were organized into ten discussion-viewing groups to receive two broadcasts per week on the subjects of hygiene, nutrition, and the treatment of various illnesses.

The reports on the Senegal experience with television generally are favorable. Discussions in the groups were reported to be lively and much of the managing of the discussion, over a period of time, was assumed by the women. Attendance fell off by only about ten per cent after nine months.

The Psycho-Sociological Research Centre at the University of Dakar followed this experimental television effort throughout its duration, administering learning tests to the women, conducting interviews with them and collecting demographic background information on them. The women's attitudes about the television programs and the discussions after the broadcasts also were measured. The results suggest that the women learned a great deal and actually passed along some of their new knowledge to family members and friends.

Television in Senegal also was used on an experimental basis to teach literacy to mixed audiences of men and women around the Dakar area. UNESCO reports that "far from merely disseminating through television traditional forms of instruction, the literacy programs sought to find a specific television language which would radically transform established pedagogical methods..."³⁶ At the same time programs were developed to teach consumer education, ways of saving money, and problems of school children.

The Senegal television experience was limited both from a standpoint of geographical coverage and the audience served, but it was useful in establishing guidelines relating to conditions of program reception, feedback, and the development of effective materials for reaching rural and urban poor audiences. Those readers desiring more detailed information on the Senegal effort should consult UNESCO's Reports and Papers on Mass Communication No. 69, *Mass Media in an African Context: An Evaluation of Senegal's Pilot Project*,³⁷ and No. 50, *Television and the Social Education of Women*.³⁸

Another pilot experience in rural television involved the creation of teleclubs in France to listen to a series of programs called *State of Emergency*.³⁹ The programs were designed to create awareness in people about the conditions of life in rural areas and to stimulate solutions to the problems of the rural areas. The success of this pilot effort apparently led to the development of other similar type projects in Italy and Japan as well as the efforts in India previously described.

Bourret (1973)⁴⁰ has cited two rural television experiences underway in the Philippines—one in the Cebu area and the other on the central island of Negros—as examples of cost-effective use of television in the rural areas of developing countries. He cites the use of a network of low-power transmitters and technical advances in the development of solid state devices and integrated circuits as well as the manufacturing of new portable battery-operated equipment, low-cost video tape recorders, cameras, and other items of studio production hardware as definite possibilities for bringing reasonably priced television systems to low-income areas.

Another approach cited by Bourret for lowering the costs of television is to make educational television more participatory through group viewing and discussion and thus reduce the number of television sets required. He further outlines the need for breaking away from centralized production and distribution systems of educational television which traditionally have been expensive and unresponsive to the local needs of people. Most educational television projects to date, Bourret indicates, have used relatively expensive commercial broadcasting equipment and approaches which account in part for the high costs of television.

The advent of satellites and their current experimental use to distribute television and radio broadcasts in India, Brazil and the United States may add another chapter to the experiences in the use of television for rural development.⁴¹ Because of the complexities of financing, introducing and implementing a satellite

television project, there is little expectation, however, of the practical use of satellite television for rural development in the very near future. Kenneth Polcyn's *An Educator's Guide to Communication Satellite Technology*⁴² should be required reading for any country considering the use of satellite television.

To conclude, the general experiences of countries which have used television for non-formal purposes suggest that at least in the rural areas, television's usefulness may have to be restricted to formal education purposes, as has been the case in El Salvador. It may be ideal, however, for some non-formal use if the kinds of low-cost approaches to television outlined by Bourret are implemented and if programming can be developed which is more reflective of the socio-cultural patterns of life in less-developed countries. Such programming needs to incorporate activities which are entertaining to both rural and urban poor audiences, while at the same time portraying community problems which are real in a situation known to the audience. Realism and credibility are particularly important aspects in the use of the television broadcast medium. If the programming is not attuned to the culture and daily lifestyle of the audience, it tends to be seen as something artificial and foreign which is not an integral part of real life for the viewers and hence, not credible.

One other possibility for the cost-effective use of television in non-formal education programs may be that of extending the services of an existing educational television system within a country to rural areas where electricity is available. This type of effort currently is under consideration by El Salvador, which has two broadcast television channels specifically set aside for education and could easily install additional TV receivers in rural communities.

Grant⁴³ recently has reported that the Ivory Coast is following this approach by using its existing television broadcasting facilities to reach adult illiterates in the rural areas with programs on infant nutrition, soil conservation, folktales, hygiene and the problems of rural exodus. In January 1974 practitioners and interested representatives from fifteen countries spread over four continents met for a week in Abidjan for a UNESCO-sponsored colloquium on "Technology in Out-of-School Education." The purpose was to unveil what first steps Ivory Coast had taken in its out-of-school programming, to witness examples of how other countries had organized their non-formal educational programs, and finally to develop a set of policy recommendations for the extension of the Ivorian out-of-school effort.

2. Radio

Schramm indicates that there is no one particular best medium for non-formal education, but he gives radio a high rating. He cites the use of radio for training purposes, for practical instruction in agriculture and health, for talks on national policies and priorities, for correspondence schooling, for community development action, for study groups, for literacy, and in training and development campaigns, such as family planning, as well as for general entertainment.

The Poona radio rural forum pilot project in India is cited as the most celebrated use of radio in development. This UNESCO-sponsored pilot project was started in 1956 in 144 villages near Poona in Maharashtra State. In this radio listening pattern, a group of 15 or 20 villagers came together twice a week to listen to a 30 to 45 minute program dealing with subjects on agriculture, health, literacy, education, local self-government, and other aspects of economic and social development. Along with the convenor or leader of the group, the villagers would discuss what they heard on the broadcasts, and, where appropriate, would take community action. The Poona experiment was studied by Neurath (1968)⁴⁴, comparing the forum villages with villages that had no forum, but some of which had village radios. Neurath found that forum members learned more about the topics under discussion than did villagers without forums and also participated in more decisions for action. And in the non-forum villages, the majority of the learning gains were attributed to those villages with radios. Illiterate members of the forums appeared to have gained more from the experience than the literates.

Schramm, *et. al.* (1967)⁴⁵ have calculated that the cost to organize and maintain each of the 144 forums for 10 weeks was about \$97.48, or about \$4.38 per meeting.

When the pilot effort ended in 1956, the Government of India decided to expand the project throughout the country. No systematic research was undertaken on the expanded forum project, but it is reported that the expansion goal of 25,000 forums fell short and only 12,000 were organized. Schramm reports that the pilot project was undertaken with dedication and careful support, but the expansion was not. Thus the goal proved impossible to achieve. Nonetheless, the Poona experience demonstrated that the radio rural forum can be cost-effective in bringing about community development.

In at least two other countries, careful research has been undertaken on a similar type of radio rural forum. One is Costa Rica

(Roy, Waisanen and Rogers, 1969)⁴⁶ and the other is Ghana (Abell, 1965).⁴⁷ The results of these efforts are encouraging, both from a learning standpoint and in terms of action taken by the community.

These experiences with radio indicate that group listening followed by group discussion is more influential in bringing about the intended behavioral and attitudinal changes than in group listening without discussion.

The oldest of the continuing non-formal education projects built around radio and a group listening pattern is "Radio Sutatenza" and the "Accion Cultural Popular" organization (ACPO) in Colombia. It has been in existence for about 25 years and represents one of the best efforts in the use of radio for non-formal education.

From its headquarters in Bogota, "Radio Sutatenza" services the rural areas of Colombia, broadcasting 19 hours a day and channeling much of its programming to three radio stations in other parts of the country which contribute broadcast time locally. ACPO, in turn, publishes the most widely read weekly newspaper in Colombia and is well-equipped with large printing facilities. The program relies upon 200 field workers and hundreds of parish representatives, literacy group coordinators and about 20,000 volunteers who work as aides in the radio schools. The aim of "Radio Sutatenza" and ACPO in Colombia is the promotion of fundamental education and community development efforts for the peasant farmer.

Hard data on the effectiveness of the Colombia effort is not available because the program has not been systematically researched. It has been reported that there are about 20,000 radio schools and some 200,000 individuals enrolled in the program. Further details on the "Radio Sutatenza" and ACPO experiences can be found in Schramm's *Big Media, Little Media* and in Emile McNany's *Radio's Role in Development: Five Strategies of Use*. The German study of Radio Sutatenza by Musto (1969)⁴⁸, which has now been translated into Spanish, also documents ACPO's efforts in Colombia as does Brumberg's⁴⁹ report on Radio Sutatenza published in 1972 by the International Council for Educational Development.

In terms of cost-effectiveness, radio can be given a favorable rating, but the evidence suggests that in and of itself, radio, or for that matter television, is insufficient to accomplish learning tasks. Rather, it must be built into a teaching-learning system combining study/discussion groups, printed materials, other media and some type of organizer/leader. The combination itself within non-formal

education is especially fragile and important because radio usually is used by untrained teachers who geographically are situated at a distance from an organized institution.

McAnany indicates that "despite suggestive ideas about television's role in rural areas (Bourret 1971) and the increasing use of video tape recorders (VTR) for community development (Gwyn, 1972), the cost-effectiveness of radio is still more promising in comparison."⁵⁰

Radio is cited as being particularly helpful in accelerating or extending a program and in reaching "hard-to-reach" rural audiences quickly and quite inexpensively.

Among those countries cited as using radio successfully in non-formal education are Australia, Canada, Colombia, Ghana, Guatemala, Italy, Kenya, Niger, Nigeria, Pakistan, Taiwan, and the People's Republic of China, where farmers plow their fields with transistors slung over their shoulders.

While useful in most types of non-formal education projects, media such as radio and television are not always essential. Citing the examples of Chad and Tanzania in attempting to localize the village schools, Schramm indicates that in general, the smaller the project insofar as objectives and audience to be reached, the less need there is for instructional media such as radio and television. However, the bigger and more complex the project, the more difficult it is to localize. Here media, such as radio, can play a crucial role in helping to give local flavor and fulfilling local needs while sharing expert teaching and providing information quickly over large areas, and at low costs.

In short, the potential advantages of radio for the task are four: *time, cost, effectiveness and localness.*

3. Video Taping

One of the more recent uses of technology in non-formal education which has received considerable attention in publications of various kinds is *video taping*. The unusually large number of written documents discussing video taping, as well as the distinct use of video taping for promoting community participation in solving problems, partially explains why this medium has been given extensive consideration in this bulletin.

The use of video taping and filming has been cited by Schramm,⁵¹ Kennedy,⁵² Schulz,⁵³ Guite,⁵⁴ Carpenter,⁵⁵ and more recently by

Casey,³⁶ as a means for promoting social change and community participation at the local level. Known instances of the use of video taping include experiments in Alaska, Canada, Tanzania, India, Peru, the Republic of South Vietnam, and in rural areas of Appalachia in the United States.

Reviewing the Canadian 'Challenge for Change' project, the Alaska Skyriver experience, the Tanzania "Year 16" project and a video taping effort in Rajasthan, India, Casey describes uses of video taping which have proven effective in creating village consciousness and in enabling rural and urban poor people to produce their own messages from their own perspective. These messages can then be conveyed vividly by audio-visual means to policy and decision makers in centralized government agencies.

To cite Casey:

Portable video tape machines have several distinct characteristics: they are easy to control—within a few weeks anyone can handle them confidently; tapes can be erased and reused many times; and they do not require processing before they can be viewed. The technology provides instant feedback—people can see and hear themselves in a matter of seconds. Non-professionals can define their own programs and learn to edit their own tapes quickly and without difficulty; thus video taping can be a participatory medium. Because videotapes are easy to handle and do not require studio equipment, they are extremely well suited to show people interacting in a dynamic way in their own cultural milieu. The materials thus recorded can provide invaluable insights into people's knowledge, experiences and real needs. The exchange of video tapes as a means of communication between communities, and between people and their government can circumvent mediators who interpret messages according to their own perspectives before sending them on. The video tape medium, therefore, is ideal for most of the world's illiterate villagers who cannot express themselves in script, but can do so in the world of spoken words and visual images.³⁷

The use of video taping has not been systematically researched and there are many questions in need of answers. Some of the problem areas which one needs to be aware of in planning for the use of video tape are: costs, equipment compatibility, and the development of a system or context for its use:

a.) Costs—while the operational costs of video taping equipment are not too high, the initial investment can be expensive. In many cases this cost prohibits easy access by villagers to this technology.

b. Compatibility—the combatibility of the video playback equipment with the tape recorder must be insured so that instant replays are possible. The present lack of standardization of equipment is a real drawback.

c. Use within a total development system—the biggest problem, of course, is to develop a system in which video taping technology and its potential for social application are exploited in an optimum way.⁵⁸

The need for an air-conditioned room to store video tapes so that they do not deteriorate and the need for replacement parts for the video tape recorder also have been mentioned by technicians as important considerations in planning for the use of video tape.

Video taping stresses a process rather than a product and its real strength for development purposes stems from the fact that its use is oriented toward community problem-solving activities. The potential of video taping, according to Carpenter,⁵⁹ is "that it is not a broadcaster, but a narrow-caster—zeroing in on particular problems, communities and constituencies."

The Skyriver project directed by Tim Kennedy is a particularly good example of how the video taping process works within a community development context. Skyriver started on the lower part of the Yukon River in the Eskimo village of Emmonak, Alaska, where Kennedy previously had spent some time organizing a fishing cooperative. Through funds from the Office of Economic Opportunity, Kennedy—not trained as a film maker—was able to use video taping and filming to help get the Eskimos of Emmonak to advocate changes that they themselves collectively wanted, but had never been able to accomplish because of differences of opinion among the villagers and their feeling of powerlessness.

Through video taping and filming villagers were encouraged to talk about their problems. The talking about village problems and the taping of these discussions had the effect of consciousness-raising. It allowed people in Emmonak to see common problems and feel a sense of community in proposing solutions to the problems and presenting the problems and solutions to government officials.

As an example, Kennedy describes the incident involving an Eskimo who strongly objected to sending his daughter to a boarding school in Oklahoma. He feared that her absence from the family, community and Eskimo culture for extended periods of time would isolate and uproot her. His solution was to have localized secondary schools which would be close enough for her to come home on the weekends. According to Kennedy, education officials seeing the

tape were flabbergasted at the information and were so moved by the presentation that a centralized boarding school plan eventually was abandoned in favor of regional secondary schools.

Another aspect of the Skyriver project cited by Kennedy was the making of oral history films. Like the other films, their effect was dramatic but in a different way. In Alaska there still is a generation of Eskimos who remember the days prior to the settlement of Europeans and the bringing of their culture. In one film an elderly man spoke of the power of the medicine man. The showing of this film gave others the courage to speak out and not be ashamed to talk about customs which had been discredited by the Europeans. Just as important, the film served as a catalyst in bridging the generation gap—many young people began asking, even pleading with their elders to recall the past. Film served to restore pride in Eskimo ways.

In the village of Mateo Pumacahua, Peru, an experiment in video taping has been reported by Gerace, Lazaro and Mayuri⁶⁰ which is similar in nature to that of the Skyriver project. At the time of the experiment, Mateo Pumacahua was a newly created village or "pueblo joven" of about 100 families. The villagers showed signs of disunity, discontent, distrust toward neighbors, and a loss of self-confidence. Under the auspices of "Accion Comunitaria del Peru" portable 1-inch video tape recorders were introduced, villagers were taught to use the recorders, and were encouraged to talk about their feelings and problems. These sessions were recorded and later, these tapes were screened and discussed by the community in town meetings. Gradually, over a period of time, the discussions after the screening led to dynamic interaction amongst the villagers and eventually awakened a spirit of cooperation and reflection in them. Neighbors came to know each other and developed a community spirit in which they recognized that all had a role to play.

The video tape recorder later was used by the villagers to record messages to acquaint government officials outside the village with their community problems in which government assistance was needed.

The Mateo Pumacahua experience, according to the "Accion Comunitaria del Peru," has demonstrated that when a villager learns to handle the new communication technology, he can express his problems in a manner that is so natural and moving that he evokes empathy and understanding on the part of those viewing the tape. This empathy and understanding clear the way for more concrete action.

Two other video taping experiences worthy of mention are the

Tanzania "Year 16" project in Africa and the Alexandre de Rhodes experiments in the use of portable video tape recorders in South Vietnam.

The Tanzania "Year 16" video taping project, as reported by Schulz,⁶¹ was an experiment in the use of communication for social change. It set out to produce a record of the historical experience of the Ujamaa movement, which is a cooperative approach to rural development characteristic of the "Tanzanian way" to national development. The people themselves produced this record. The record, however, was just one result of a much larger process which had as its objective the involvement of the people who were illiterate and underemployed in their own development and change. Video taping and filming gave to illiterate communities the means to express themselves and to establish a communication between the villagers and their outside leaders. To quote Schulz:

The new "Ujamaa villages" were communities affected by poverty and social change. They were the result of spontaneous initiatives by peasants, plantation workers and Party Youth League members to come together and farm collectively, to solve in common, through self-help and collective decisionmaking, the problems posed by development. As in most development situations there was a tremendous communication gap between these communities and the administration based on misunderstanding, lack of information and sterile attitudes, illiteracy and traditional channels of one way communication were obstacles to integrated development—linking together communities in a global society.

The project had been prepared and organized since 1967, including contacts with international development agencies and the Tanzanian Government. Several field trips, including visits to Ujamaa villages, preceded the beginning of active work in August 1971. A cross-classification of subjects and themes had been elaborated including 50 items which were to be documented during the 15 months of filming. The original idea was to cover 5 to 6 particularly significant Ujamaa villages representing different types of villages, different stages of development, different ethnical, historical, economical, ecological conditions, different degrees of success (or failure). The starting point had to be a successful village where we were supposed to get a positive and favorable picture of the Ujamaa movement. The first materials should then be used in other more recent or less successful villages to promote discussions, provide possibilities for comparison and stimulus for emulation.⁶²

The realities of the field work changed the project so that eventually work was carried out in only three villages—Mbambara in the Tanga region and the Ngami and Matiku villages in the Singida

region of central Tanzania. Nonetheless a catalyst for change at the community level resulted in which "people were stimulated to talk about their problems...[and this] brought about a greater awareness of the existing problems and issues."⁶³ "Passive attitudes changed into active ones: people who had passively supported an incompetent agricultural extension officer stood up against him and requested his transfer from the government; they did not listen anymore to empty promises from outside leaders but asked concrete questions as to the possibilities of implementation; they started saying 'We must not wait for government help but start work ourselves—if we wait for the government to help us we can wait until paradise!'"⁶⁴

Schulz fully documents the Tanzania project. Not only does he cite examples of other applications of video taping in developing countries, but he also provides guidelines for replication of the activity, outlines the problems involved, describes the equipment used and the process at length, and seriously confronts the question of the use of communication for social change.

The Alexandre de Rhodes Center operating out of Saigon is a private, church-affiliated organization that for some years has been working in the areas of community development and functional adult education using television and video taping.

The Center presently is equipped with a small closed-circuit television production studio, complete with three vidicon cameras, video and sound control equipment, telecine, microphones, monitors, two-way communication system, lighting equipment and professional video tape recorder. It also has a trained cadre of Vietnamese who form a permanent television production staff.

The Center originally had planned to air its television programs over the national Vietnamese network but disruptions related to the war effort prevented this. So under the enthusiastic leadership of Father Louis Robert, the Center in 1971 embarked on a series of experiments using a portable 1-inch video tape recorder with organized teleclubs and a group-viewing leader in and around the Saigon area and in some rural villages and hamlets. The target audience is lower-income people, and as of this date some dozen teleclubs are functioning.

The objective of the video tape/teleclub experiment is to counter the isolation within neighborhoods and villages where the concern is only for "my home," "my family" and not for the community at large. The content of the tapes is focused on Vietnamese family problems, social principles of life, notions of self-

development, health, family planning, nutrition and consumer economics.

The teleclub members (small groups of 10 to 15 people) gather once or twice a week in their neighborhood or hamlet to view a particular program and through group dynamic techniques try to arrive at a full understanding of the program's message and its direct application to their lives. Apart from the video tapes, the teleclub leaders use additional written materials with drawings which include a set of follow-up questions for review and discussion of the contents of each program.

The teleclub format provides an opportunity for individuals to get to know each other better and to become conscious of the fact that, in order to grow as individuals and as a community, they must rely on their united thinking and actions. Video taped programs serve simply as a catalyst, an agent that gradually loses its importance to the extent that the community becomes conscious of its capability for self-development.

Although these experiments with video tape in Vietnam have not been systematically researched and evaluated, several documents on the progress of the effort and the approaches used have been published by the Alexandre de Rhodes Center.⁶⁵ And based on the experience of four years of working with teleclubs, a number of things have been learned:

- Long and costly training workshops for the teleclub leaders are to be discarded in favor of a combination of orientation periods with work in the field and on-going training sessions once a month.
- Combined use of written materials with the video taped programs is more effective than video tape programs alone.
- A full-time central staff working in the field is less effective than part-time village workers in the field.
- The orientation of teleclub membership should be toward the younger adult audience because most older adults are too worried about their source of livelihood and entrenched in their own way of life to learn new approaches and appreciate the spirit of community development.

A recent report by Jim Potts⁶⁶ on filming in Africa presents an excellent review on what is known about the use of films and mobile van units within the framework of integrated rural development. He cites uses of film which are similar to the video

taping experiences herein reviewed as well as the more traditional use of film for instruction. The years 1950 to 1960 represent the decade of experimentation with films for fundamental education.

While favorable to film as a medium, Potts indicates that the use of mobile vans to get film messages to outlying rural areas "is not an economical means of providing 'fundamental' or non-formal education on a regular basis to the mass of people."⁶⁷ Developing countries would be well advised, according to Potts, to wait for the eventual expansion of TV networks to distribute films, and in the interim, radio as well as other less expensive media could better be utilized. He suggests that films and mobile units are best used "to support precise development objectives in places where the need is concretely identified..."⁶⁸ As examples, he cites the use of film and mobile vans to present interviews with model farmers making recommendations for changes in agricultural practices to other farmers or for disease eradication campaigns.

4. Audio Tape Technology

With the advent of audio cassettes—introduced by Philips Holland in the mid 1960's—the person receiving the message has been given *more control over the receiving and listening context* than traditionally is the case with most media and technology. Unlike broadcast media, playing time can be arranged to local conditions, and in instances where it is used with a discussion group, the convenor of the group as well as participants can listen to it ahead of time and be better prepared for a group discussion session.

Time of exposure to the message, as well as *frequency of exposure*, is controlled by the person receiving the message so that questions of when, where, and how long an individual is exposed to a message are solved easily. This technology, since it depends on listening, is also *literacy free*: persons do not have to be able to read in order to get the message.

To the literacy-free factor must be added the advantages of *localism* and *intimacy*. Audio cassette technology permits the development of messages in the local language using familiar names, events, places, and local people. This promotes credibility of the message and helps to assure that various segments of a population can identify with it.

Since the listener can control the receiving conditions himself, the most intimate subject matter can be dealt with explicitly and in detail and thus legitimize topics not open to public discussion. This feature meets the problem of dealing with sensitive subject matter, as is the case of family planning programs, relieving a person's embarrassment in seeking out such information.

Audio cassette technology also permits a tremendous amount of flexibility because messages do not have to conform to set time periods as is the case with broadcast media. Messages ranging anywhere from one minute to thirty minutes can be recorded.

In actual use, audio cassettes also can be replayed promptly to enable the listener to repeat any points covered too quickly or needing repetition; and in the case of repetition, the same level of accuracy and enthusiasm is always present each time the recording is played.

Finally, if the cassette machine has a playback/record capability, the listening audience can record its own questions, comments or observations on the reverse side of a cassette.

As far as the hardware itself, the audio cassette has the advantages of being low-cost (the machine can be purchased for as little as \$20 US and the tape cassette runs about \$1 US), simple to operate, durable, rugged and portable, with power supplied by either current or battery. Built with modern transistors, the machine weighs no more than two pounds, is smaller than a shoe box, and there is no handling or threading of the tape since it comes in a closed container which is no bigger than a package of cigarettes.

Although little if any statistical research information is available on the effectiveness of audio cassette technology, several reports on its use are available.

Colle,⁶⁹ for instance, has reported in some detail on the use of audio cassettes for development programs, citing use of the technology in India with FAO's farmer training and literacy project. About 1,800 cassette players and some 15,000 cassette tapes on such diverse subjects as control of insects, plant disease, local farming problems, interviews with credible subject matter specialists and case studies of "progressive" or model farmers, were put into the hands of local leaders for group sessions and individual use by the villagers.

Audio cassettes also have been used in the training of para-professionals, particularly midwives, in Pakistan's family planning program where manpower to train personnel was scarce.

In Taiwan, a successful "integrated communication system" has been reported by Colle which links together the national radio-TV media with local field workers and cassette equipment to bring agricultural and rural welfare information to Taiwan farm families.

And in Yates County, New York, one of the poorest rural counties in the United States, with a population of about 20,000, where people still live in homes with dirt floors, no electrical power, no plumbing, not enough food and poor medical services, citizens were informed about low-cost medical and dental help through a successful use of audio cassette technology.⁷⁰

There also are observer reports⁷¹ that the Summer Institute of Linguistics in South Vietnam is experimenting with inexpensive battery-operated audio cassettes to teach adult basic education in rural hamlets outside of Saigon.

Perhaps the best documented use of audio cassette technology to date is the "Radio Mensaje" (Radio Message) project outside of Quito in the region of Tabacundo, Ecuador, which has been developed by Father Barriga in cooperation with the University of Massachusetts. Reporting on the project, James Hoxeng,⁷² of the University of Massachusetts, provides excellent commentary and a chronology of events surrounding the introduction and use of the cassette recorders. Under the University's auspices, cassette tape recorders were introduced into the ongoing radio project in early 1973 as a feedback device for generating programming material that could be broadcast to the rural radio school centers.

Volunteer assistants from the communities who act as teaching assistants in the radio school centers are responsible for the recorders. The individuals from particular villages listening to the radio broadcast range in age from about 15 to 30 years and are both male and female. Together with the volunteers they prepare and submit program material recorded on cassettes to the radio station, where it is edited and broadcast in two weekly half-hour programs called "The Farmers' Message."

The expectation, over time, is that by producing program material for broadcast and then hearing their own voices, the villagers will develop an increase in self-esteem and self-awareness. There also is the expectation that this use of the recorder will contribute to improved learning performance from the radio broadcasts and a decrease in "drop-out" rates. Furthermore, there is the hope that the possibility of exchanging information about community development activities, via the cassette material aired over radio, will give more impetus to the

basic education and community development goals of the Tabacundo program.

It is still premature to tell whether the introduction of the cassette recorders will have "staying power," with the radio program. The preliminary research results, however, are encouraging. First, the amount and variety of material being submitted to the radio station is on an upward curve in both quantity and quality, and the volunteer assistants together with the villagers are thinking of new ideas for using the recorders. Similar to the use of video taping reported earlier in this paper, the rural leaders already are using the recorders to present to development agency officials points of view of different people in the community, and thus bolster their case for needed services.

Second, reading, writing, comprehension and awareness scores, according to the University of Massachusetts personnel working with the project, have increased. Attitudinal and aspirational changes indicating increased risk preference and discontent with present levels of living also have been reported.

In short, increased self-awareness, self-esteem, learning and community participation are attributed to the project and its use of the audio cassette technology. A complete summary of the evaluation undertaken by the University of Massachusetts is expected soon.

5. Programmed Instruction

The use of programmed instruction techniques for non-formal education in the developing world has not been reported in any significant way. Perhaps the most celebrated use of programmed instruction materials occurred in Rhodesia in the early sixties. But unfortunately, the project ended in 1965 when Rhodesia announced its unilateral declaration of independence forcing many individuals associated with the project to leave the country.

Schramm⁷³ reports that at that time the personnel working on the project had developed some 75 programs, which were in various stages of testing and use.

Many of the materials had been successfully used with African and European students, professional and skilled workmen, including agricultural trainees. Schramm has reported on some of the research undertaken for this project in Rhodesia in his *Big Media, Little Media*; he indicates that "the test results...leave lit-

tle doubt that programmed instruction works as well in developing regions as in economically more advanced countries."⁷⁴

6. Traditional Media

Citing the problem of furthering national unity and integration in India, R.P. Raina⁷⁵ of the Department of Teaching Aids in New Delhi has argued for a more concerted use of traditional media to promote the country's sense of nationhood. Along with the use of puppets, folk dances and songs, Raina has presented a plan outlining the potential use of *kathas*, *kirtans* and allied congregational discourses as well as the *melas* or fairs held in every village, town and city in India for educating India's masses on a sense of what is essentially and uniquely Indian.

India is cited as having one of the richest infrastructures for the use of traditional media. E.V. Chitnis, *et. al.*⁷⁶ described this infrastructure as consisting of the following:

- A theatrical tradition unsurpassed in the world in its antiquity and continuity. Almost every state in India has a traditional stage which is at least 2000 years old. These include theaters like *Tamasha*, *Jatra*, *Jhanki*, *Bhavai*, *Nautanki*, *Bhagwat Mela*, *Kuchipudi*, *Kathakali* and others. In the south the traditional Sanskrit stage still exists.
- A similar unbroken tradition in the other performing arts like music, dance, mime, etc.
- An ancient as well as modern tradition in the graphic and visual arts.
- A unique literary and oral tradition.
- A very considerable talent in the fields of acting, dancing, music, theater art and film making.

These traditional media are not merely a form of art expression, but are a way of expressing knowledge in a manner which is acceptable and functional. The poorest man in the land has access to this culture, expressed either in story, poem, play, song, aphorism, proverb, custom, ritual, rites, or a variety of other ways characteristic of folk culture.

In an effort to examine the field of myths, legends and folklore in general, India's Space Applications Center, currently involved

in developing educational television programming for experimentation with the ATS-6 satellite, has undertaken the "Panchatantra" Project.⁷⁷

The first effort of this project consists of research based on the now internationally famous "Panchatantra" folk tales which have been made into a film. The unique characteristic of the "Panchatantra" being studied is the box within a box format very popularly used by story tellers in India's oral culture. It is said these stories were originally developed for the general education of four princesses who refused to go to the school for the usual learning activities.

The "Panchatantra" tries to provide a basis for looking into relatively personal values and attitudes by creating a series of hypothetical situations wherein a basic attitude is examined. There is absolutely no direct moralizing but there is a very definite content in the communication.

Crawford and Adhikarya⁷⁸ have discussed the advantages of the use of media which are part of the local village people's own cultural frame of reference. They cite the use of the traditional Javanese media of the theater, employing both live actors and puppets in the family planning program of Indonesia.

Drawing on what is known from many communication studies, these authors state that in order to convey a message with effect, one has to use the language, symbols and styles familiar to the audience. In Java this means the use of folk puppetry opera (*ludruk*), comedy (*neog*), and the shadow puppet play (*wajang golek*) as the trusted media for conveying new ideas to people who are illiterate and unfamiliar with the process of perceiving and interpreting symbols and messages from other types of media.

Preliminary reports on research in progress to develop these traditional Javanese media for the transmission of family planning information are favorable although no cost or effectiveness data are yet available.

Everett Rogers makes reference to the use of traditional media such as folk theater, puppet shows, travelling story tellers, balladeers, poets, and shadow figures, cautioning that "we should not forget that in less developed countries, a far-flung network of communication channels existed long before the introduction of print or electronic media."⁷⁹

Rogers cites a 1969 study by Benjamin in Northeast Brazil

where "cantadores" or singing poets act as intermediaries in a two-step flow of communication; the singers learn of new ideas from the modern mass media, and then pass these messages along in poetic form to villagers.⁶⁰

Other countries reported to have made use of traditional folk media for non-formal education programs include Malaysia, Niger, India, Thailand, Pakistan, Iran, Taiwan and China.

For example, in Thailand the use of traditional media has focused on two major types of shadow play: the *Nang Yai* and the *Nang Taloong*, in which stylized stories of romance and war are presented through the use of intricate and beautifully carved cowhide characters, whose shadows are projected on a screen. The *Nang Yai* from central Thailand is virtually a lost art. It is no longer popular entertainment and remains in existence primarily under the auspices of the Fine Arts Department. It has given way to the *Khon*, a drama with actors, narrators and music whose characters wear masks. In the south, *Nang Taloong* still is performed for all kinds of occasions—ordinations, weddings, funerals, etc., and in some instances, traditional plots are being replaced by more modern themes with heroes driving motorcycles and heroines in miniskirts.

The *Nang Taloong* characters are thin, puppet-like figures cut out of hide that are no more than two to three feet high. They are moved across the stage behind a cloth screen, while a light behind throws their outline on the fabric, creating the shadows which give the art form its name.

A shadow play performance most often takes place in the evening in open air on a platform of bamboo and timber built above the ground. The puppets perform their special kind of magic behind a white cotton cloth stretched taut, with a solitary light behind it. The audience gathers around the platform, standing or sitting on the grass.

Making the puppets perform is, of course, the special province of the *dalang* or puppeteer. He sits cross-legged behind the screen, moves the puppets, conducts the orchestra, narrates the story, and sings and acts all the dramatic roles.

A shadow play performance has three parts: the prologue, which introduces the main figures in the story; the actual drama; and the epilogue. The story is usually ended at a suspenseful point in order to lure the audience back another night.

Though the use of traditional media is to be favored because they are long-established, well-accepted and highly credible,

Rogers found that "while the traditional media have been utilized in certain countries, their potential is far from realized."⁸¹

For those readers interested in pursuing the area of traditional media, the International Planned Parenthood Federation (IPPF) publication, *Folk Media and Mass Media: Their Integrated Use in Communication Programmes for Social Development and Family Planning*, is recommended.⁸²

7. Gaming Media

One specific use of low-cost technology is that of gaming and simulation media. The University of Massachusetts School of Education has participated with the Ministry of Education in Ecuador in a cooperative venture in this area.⁸³ The devices which the project has developed have been grouped by David Evans and James Hoxeng, workers on the project, into three general categories:⁸⁴

- *Simulation games*—board games which deal with complex social realities and are intended to clarify social issues and promote group discussion of problems. The games provide a means for exploring and testing possible behaviors in real life situations.

- *Fluency games*—games that deal with simple numeracy and literacy skills by creating entertaining and involving processes which provide practice and increase the confidence of the players in their own abilities in areas relevant to consumer buying and social growth.

- *Expressive techniques*—a residual category which includes a variety of devices designed to make it easier for villagers to create stories, write things and express themselves in general. This category includes things such as "fotonovelas" (comic books) featuring photographs of rural people in a realistic situation of everyday life.

The game of *Hacienda* (The Farm),⁸⁵ modeled after the popular game of *Monopoly*, has been used with villagers to give them a better understanding of the processes and institutions around them, of how these operate and impinge on the life of the community and individuals, and what the rural people can do to improve their lives by modifying these institutions and processes to use them more effectively.

Hacienda, and its variations called *Game of Life*, the *Market*, the *City*, etc. are basically board games, with some elements of role playing, where each player's objective is to make use of the opportunities offered to him by society. The board squares are filled with various institutions of rural life: the church, bank, jail, center for adult education, savings and credit co-operatives, and so forth.

Neighbors gather in a common community building, a home, or the market place to play inexpensive home-made games of this nature. And although the games are designed by a technical team, they are often modified on the spot by the players themselves to fit local circumstances. Often a game goes on for hours, generating great amusement and wild enthusiasm as well as serious discussion and debate.

A systematic evaluation of the simulation and gaming activities in Ecuador²⁶ now is underway; additional games have been added such as the use of dice with letters that permit an individual to form words through the pleasurable experience of playing dice.

The initial policy of the project in Ecuador has been one of encouraging experimentation with the materials by the widest possible range of existing governmental and private institutions working in the rural areas as well as by individuals. In addition, the project has promoted the creation of a non-institutional approach through which villages choose two to five people to receive intensive training on the use of the games for a period of four weeks and who then return to their village to begin acting as "learning facilitators."

Commercial production and distribution of the gaming materials also is being explored in an effort to develop a comprehensive national network of complementary distribution systems.

In brief, the gaming and simulation activities in Ecuador represent an attempt "to stimulate the creation of a community-based demand system, where people become aware of themselves as resources, and where communities begin to develop the skills required to interact with agencies already present. People develop a set of survival skills..."²⁷

8. Multi-Media Utilization

A more recent trend in the use of media and technology, not only in non-formal but in formal education programs as well, is

the use of a combination of media integrated into a teaching-learning system. Examples of such use of media are Great Britain's Open University,⁹⁰ Australia's radio correspondence school,⁹⁰ the NHK radio-TV correspondence high school of Japan,⁹⁰ Mexico's "telesecundaria,"⁹¹ the Korea educational reform program,⁹² the Basic Village Education Project in Guatemala⁹³ and the Chinese educational experiences built around the commune.⁹⁴ The Open University in Great Britain, Japan's high school program, Mexico's "telesecundaria" and the Korea program are treated extensively in documents listed in the bibliography of this paper; the Guatemala project using radio and other materials is still at the early operational stage.

The Basic Village Education (BVE) Project in Guatemala is an experimental effort focusing on the dissemination of agricultural information and basic education to the rural Spanish-speaking adults and the Quiche-speaking Indian population. Besides offering a stimulus to rural development efforts in Guatemala, another objective of the project is to determine the effectiveness and relative costs of differing mixes of communication media to supplement the work of extension agents, who are in short supply. Radio is being used as a principal component in combination with audio cassettes, flip charts and handout materials.

Experimentation with the project is being carried out initially in the Quesada, Yupiltepeque and Comapa areas of the eastern part of Guatemala by the Ministry of Education and the U.S. Agency for International Development. Preliminary findings from the BVE project are expected to be available by mid-1975.

Rural development in the People's Republic of China, which has been extensively promoted, has received less documentation. It merits attention as an example of multi-media utilization which offers other nations useful lessons in locally designed, integrated, managed and supported education. Hsiang-po Lee has documented the Chinese educational experience as an attempt to "break the rigid mold of traditional formal schools and to forge a link between educational means and methods of both formal and non-formal varieties."⁹⁵

As is the case in Tanzania, to which this paper earlier alluded, the beginning of a reconstruction of rural society in China preceded the beginning of a new form of rural education. China reconstructed a village society, and the village then actively molded the kind of school it felt it needed. Rural primary education in China, therefore, is directly relevant to the social and economic goals of the commune and villagers take an active part in the operation of their learning systems.

Through a variety of institutions and facilities, the Chinese commune discharges functions such as basic literacy, training and leadership. The content and timing of educational programs is arranged around the regular farming activities of rural youths and adults so as not to pull them off the farms and place them in school. Much of the emphasis of this education is given to solving actual local problems through experimentation.

Communication media along with channels of interpersonal communication have been used extensively and systematically on a massive scale. These media include visual and graphic materials such as movies, newspapers, posters, bulletins and pamphlets, home visits, group meetings, and correspondence courses that supplement radio programs.

Unfortunately, detailed data on the effectiveness and costs of the China experience have not yet been reported. A systematic study of China's efforts, along the lines of the Stanford evaluation of ITV in El Salvador⁹⁶ or Great Britain's evaluation⁹⁷ of the Open University, would contribute greatly to our understanding of how a combination of media can be effective in promoting non-formal education within a rural community setting.

It is obvious from the China experience that communication media and technology are components within a broader program of change. The basic element appears to be change in the community itself: change in attitudes toward the school, a reconsideration of the kind of school or learning a community needs, and active participation of the community in bringing the school into the ongoing development of the community.

Tony Dodds (1972) and his colleagues at the International Extension College have published a detailed description of multimedia projects in numerous countries giving particular emphasis to those using broadcast media.⁹⁸

Along with a discussion of rural development, education, and the mass media, they present a series of case studies on the Rural Forums of Ghana, civics education by radio study groups in Tanzania, the Tevec Project in Quebec, Canada, the Radio Clubs of Niger and the radio schools of Honduras. Case summaries also are included on the teleclubs of France, television literacy classes in Italy, "The Archers" program which communicated with farmers in Great Britain, the use of agriculture extension aids in Malawi, film strips and radio in Rwanda, film discussion groups in Togo, and a rural family development effort in Wisconsin.

In this latter instance, television programs were used as the center of the delivery system to assist rural adults to develop lifecoping skills relevant to the rural setting. The project was under the auspices of the Rural Family Development (RFD) Project of Wisconsin University's Extension Service. The RFD programs made use of a new magazine format and employed techniques and personalities common in popular entertainment television. Printed matter was also used to supplement the programs. A system of home visits by a staff of trained monitors was also instituted to give the all important personal contact and provide feedback to the program developers.

Dodds concludes his survey of multi-media projects indicating that "the choice of medium is less important than the content and the way it is used,"⁹⁹ and that the more "glamorous media at great expense may be less effective than the careful integration of existing resources."¹⁰⁰

III. TENTATIVE CONCLUSIONS

We have now come full circle in our discussion of illustrative instances in which media and technology are being used in non-formal education programs. The intent has been to present highlights of a complex and still relatively uncharted area of inquiry, to point out some areas needing further review and study, and to offer ideas and suggestions of practical value.

Rather than attempt to be exhaustive in representing all the variety of media use that exists, we have indicated the most common patterns and those which to some extent have been documented as showing the greatest promise.

The variety of uses to which media is being put is varied and extensive. Unfortunately, there is very little good research and evaluation evidence about the effectiveness of these media, much less their cost-effectiveness in non-formal settings.

Furthermore, it is apparent from our review that although non-formal education has a great potential for the use of a variety of communication media and technology, the potential has scarcely been tapped. While this paper has described a number of creative uses of media and technology, one overall conclusion parallels that reached by Coombs and his colleagues at the International Council for Educational Development in their survey of non-formal education: "It is our overall impression that non-formal education as a whole has tended (like formal education) to cling to traditional, costly, and inefficient instructional means and methods, failing to take sufficient advantage of the alternative technologies available."¹⁰¹ In the process of this review, we have identified several factors that generally are accepted as influencing, for better or for worse, the use of communication media in education. Although not necessarily falling into mutually exclusive categories, these "influencing factors" can be grouped under the following four major headings: those factors relating to *the process of planning, financing and evaluating* nonformal education programs using media and technology; those concerning *the media per se*; those relating to *the context for using the media*; and those focusing on *the role of the target audience*.

Planning, Financing and Evaluating

1) Nonformal education programs using media and technology are doomed to limited success if they start with a technology that someone is anxious to use. Planning for the use of media and technology must begin with an important educational problem in need of solution.

2) Government financing and government organization is not the only possible way to bring education to rural regions. The "Radio Mensaje" project of Ecuador and the Radio Sutatenza and ACPO experience of Colombia show remarkable accomplishments by dedicated private organizations, which suggest that at some stages in the development process, private groups may have advantages over governmental organizations.

3) Too little attention seems to be paid to the determination and clear definition of goals and objectives of non-formal education projects, and too much to simply getting a project operational. This is particularly evident in projects using media and technology and no doubt accounts for the negative images and disdain of some people toward communication media and technology.

4) The lack of a strong evaluation component in most non-formal or for that matter formal, education projects has hindered the state-of-the-art development of learning systems with the result that errors are repeated and difficulties recur in education programs around the world.

5) Before being introduced on a broad basis, innovations in non-formal education should be employed at first in situations which permit comparative and controlled evaluation of their effectiveness and costs.

6) Ministries and agencies responsible for one or another aspect of rural education must combine their talents to make NFE programs work. Professional exclusiveness and barriers resulting from administrative custom must be overcome. This includes the sharing of common facilities and personnel by different programs as well as sharing information about all programs serving people in the same area. The tendency to "go it alone" often results in fragmentation, confusion to the audience served, higher costs and poor results.

The Media

7) Communication media and educational technology can be helpful in most types of non-formal education, but they are not always essential. To paraphrase Schramm,¹⁰² the smaller the project, the less need there is for media; the bigger, the more costly and complex the project, the more difficult it is to localize its efforts and, therefore, media and technology can play a crucial role.

8) Within physical limits, any communication medium can perform any educational task. Whether one learns more from one

medium than from another, therefore, depends as much on how a medium is used as on what medium is used.¹⁰³

9) The role of media is one of accelerating social change and development, rather than beginning the process. Media and technology are no panacea for development problems. They must be considered as part of the total system of needs, messages and resources over extended periods of time.

10) If there is one medium better suited for non-formal education than others, it is radio because of its wide coverage, relatively low unit cost, and its ability to reach beyond literates as well as beyond electrical power mains. Even radio, however, is almost never used effectively alone. It needs to be combined in a teaching-learning situation with some personal contact, some opportunity for response and interaction, and usually with some visual stimuli such printed texts, posters, newspapers, filmstrips, etc. This combination is particularly important in non-formal education because the media often are used by other than a highly skilled, trained teacher and far from an organized institution. Thus, a combination of media, or better, a combination of media and related interpersonal communication, is more effective than any one medium alone.

11) The use of communication media and technology, such as radio, simulation and gaming, audio cassettes, and video taping, can overcome learning obstacles associated with illiteracy. The efforts in Ecuador, Vietnam, Brazil and Guatemala are encouraging in this respect. Literacy, therefore, need not be the first priority of a rural development program.

12) For successful utilization of media and technology in non-formal education, *the media must come to the learner, rather than the learner to the media*. Put the media where the people are—market places, on the job, in the field, buses, trains, etc.

13) The use of communication media and technology in non-formal education should not be limited to dissemination of teaching-learning information. Media and technology should also be used for tasks such as motivation, attitude change, reinforcement, community participation and sheer entertainment.

The Context

14) There is no one perfect medium for non-formal education. Rather, each of the variety of media has its own potential and limitations. Their effective use requires that they meet the existing felt needs of people in a society, with particular attention being

given to the local social and political context into which the media and technology must fit. The context into which media are introduced is of fundamental importance, for unless there are individuals and agencies functioning in poor rural and urban settings to help change take place, it is improbable that communication media and educational technology can be effective.

15) If a decision is reached to use media for non-formal education, the first focus should be on the possible use of indigenous folk media and low-cost technologies that already exist within a country, and not on the introduction of new media that are beyond the economic or technical grasp of poor countries. Again to quote Coombs and his colleagues at the International Council for Educational Development, the encouragement of "pipe dreams of dramatic educational breakthroughs involving advanced technologies such as computerized instruction and satellite television can only lead to disappointment and result in slowing progress."¹⁰⁴ It is more realistic to concentrate on communication media already available within the country, introducing new media only when they are necessary for the attainment of particular educational goals.

16) It is not enough to look only at non-formal education opportunities when discussing rural development. Instead, there is need to think of education in a broad sense, regardless of where, when or how learning occurs, and in terms of developing integrated learning systems by combining formal, informal, and non-formal approaches.

17) Communication media and technology in non-formal educational settings must make full use of existing, indigenous institutions and agencies, integrating with them appropriately, if they are to perform their proper function.

18) Experiences to date indicate that the most effective use of media and technology has been in situations where they have been combined with other activities and media in a diversified approach. As examples, we have the Open University of Great Britain and the "commune" approach of the People's Republic of China.

19) Different non-formal programs call for quite different types and combinations of media, chosen because of differences in the audiences to be served, learning objectives, and most important, the conditions under which they operate.

The Role of the Target Audience

20) Group listening to broadcast media followed by group discussion is more influential in changing attitudes, beliefs and

behavioral intentions toward adopting an innovation than is group listening without discussion. Thus, the most potent element in the radio forum is group discussion and public commitment to action after the discussion. The same holds true for other low-cost technology, such as audio cassettes or gaming techniques.

21) Non-formal education programs, whether or not they use media and technology, must be closely tied to "grass-roots" level participation, and not be conceived and implemented only by the highest levels of the educational system or by outside foreign agencies.

22) Though country leaders and donor agencies must frequently be involved in the development of learning opportunities, non-formal education programs intended to be local in character and purpose must involve the people they are intended to serve from the very beginning of a project. This local involvement must begin at the discussion-planning stage and continue through the stages of implementation, evaluation and eventual modification.

23) Media and technology have developed to such a point that individuals, relatively untrained in their use can easily, effectively and with few mechanical complications produce their own messages and programming materials. Since villagers making their own programs is probably one of the most powerful forms of programming for rural development, the technology, media and resources, therefore, should be placed in their hands whenever possible.

These "influencing factors" have been presented mainly as a point of reference and practical guide for those individuals considering the use of communication media and technology for nonformal education. Any evidence either lending support to these conclusions, refuting them, or restating and clarifying any sections of this paper would be useful to the writer and to the Information Center on Instructional Technology.

FOOTNOTES

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